



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant: Brad D. Rumsey

§ Art Unit: 2841

Serial No.: 09/377,286

§ Conf. No. 7573

Filed: August 18, 1999

§ Examiner: Jeremy C. Norris

Title: Positioning Flowable
Solder For Bonding
Integrated Circuit
Elements

§ Docket No. MCT.0050US
(99-0325)

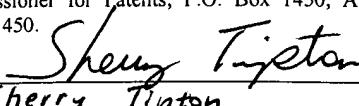
Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Sir:

This Reply Brief is submitted following the Examiner's Answer dated January 26, 2005. Please consider the following remarks, which begin on page 2 of this paper.

3-18-05

Date of Deposit:	3-18-05
I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage on the date indicated above and is addressed to: Mail Stop Appeal Briefs - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.	
 Sherry Tipton	

I. Does Healy Anticipate Claim 1?

Healy fails to anticipate claim 1 because Healy does not disclose every element of claim 1. To anticipate, a single prior art reference must disclose each and every element of a claimed invention as arranged as in the claim. *See Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458-1459, 221 U.S.P.Q. 481 (Fed. Cir. 1984). While a prior art reference does not have to expressly disclose a particular element of a claim, to anticipate based on the principle of inherency the missing descriptive matter must necessarily be present in the thing described in the prior art reference. *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q. 2d 1949, 1950-1951 (Fed. Cir. 1999). Mere possibilities or probabilities are insufficient to establish inherency. *Id.*

At a minimum, Healy does not anticipate because his circuit trace does not apply an attractive force to the sold bead formed on his interconnect pad. That is, encasing insulation surrounds Healy's circuit trace 1; therefore, Healy's trace does not apply an attractive force. *See* Figures 1 and 2. The conclusion that encasing insulation surrounds Healy's circuit trace is drawn from Healy's description of Figures 1 and 2:

[r]eferring now in detail to FIG. 1 and FIG. 2, a printed circuit trace 1 is supported by encasing insulation 2. The insulation has been removed from a portion of one side of the trace *to expose the interconnect pad 4.*

Column 2, lines 17-21 (emphasis added). Thus, Healy fails to disclose removing insulation to *expose the circuit trace 1*. As such, Healy's insulation encased circuit trace does not apply an attractive force to the solder bead 3. Also, for the same reason, applying an attractive force is not inherent to Healy. As such, the claimed bond pad assembly is structurally different from Healy.

The examiner places an emphasis on Figure 1 of Healy as disclosing the claimed bond pad assembly. But, as pointed out by the examiner, drawings that are not to scale or that are not working drawings do not support arguments based on drawing measurements. *See Hockerson-Halberstadt Inc. v. Avia Group Int'l*, 222 F.3d 951, 956, 55 U.S.P.Q. 2d 1487, 1491 (Fed. Cir. 2000). Nevertheless, the description of the article in the picture can

be relied on in combination with the drawings for what they would reasonably teach one of ordinary skill. *See In re Wright*, 569 F.2d 1124, 193 U.S.P.Q. 332 (CCPA 1997).

Based on Healy's description of Figures 1 and 2, claim 1 is not anticipated. First, Figures 1 and 2 are representative of the same printed circuit trace, Figure 1 being a fragmentary view, Figure 2 being a cross sectional view. Column 2, lines 4-7. Second, Healy does not structurally discriminate between Figures 1 and 2—they are one in the same. Column 2, lines 17-21. In contrast, Healy does describe structural differences with respect to Figure 3. Column 2, lines 40-43. Third, Healy's disclosure only refers to exposure of the interconnect pad. Column 2, lines 17-21. In view of Healy's disclosure in combination with Figures 1 and 2, Healy does not anticipate.

The examiner also relies on Figures 2 and 3 of Healy to support his position that Healy's circuit trace is exposed. As explained above, Figures 1 and 2 represent the same printed circuit trace, which is encased by insulation. Figure 3 differs from Figures 1 and 2 in that the solder bead 3 has been leveled and it has a hole there through. Column 2, lines 40-43. Thus, Healy fails to describe removal of insulation to expose the trace in connection with any of Figures 1-3. *See* column 2, lines 17-43. That is, Healy's disclosure is limited to exposure of the interconnect pad 4 and nothing more. Thus, the examiner's position that the void around the solder bead in Figures 2 and 3 includes portions of the trace and stub is respectfully traversed. Because Healy's trace is encased by insulation 2, the trace does not apply an attractive force to the solder bead 3. As such, Healy does not anticipate claim 1. Reversal of the rejection is requested.

The examiner appears to be bothered by claim 1 because exposure of a trace is not expressly claimed. The examiner correctly points out that the attractive force is applied by the trace being coupled to and extending away from the bond pad. Examiner's Answer dated January 26 2005, page 6. But, as discussed above, Healy encases his circuit trace with insulation. As such, Healy's circuit trace does not apply an attractive force to the solder bead. Therefore, Healy's structure does not anticipate that of claim 1.

In view of the remarks above, it is respectfully submitted that Healy does not teach each and every element of claim 1. Consequently, Healy does not anticipate claim 1. Reversal of the rejection is requested.

II. Does Healy anticipate claim 3?

Dependent claim 3 calls for a bond pad that is non-solder masked defined. In contrast, Healy's interconnect pad is defined by the portion of the insulation that is removed.

As discussed above in section I of this Reply Brief, Healy only discloses removal of insulation to expose the interconnect pad. Thus, it is respectfully submitted that the insulation defines the portion of the interconnect pad that is exposed. In contrast, in some embodiments of the present invention, a solder mask does not define the area of the bond pad.

The examiner asserts that Healy shows a void around the interconnect pad and the traces. As such, Healy's pad is non-solder mask defined. Examiner's Answer dated January 26, 2005, page 6. However, Healy's disclosure simply does not support this assertion. *See* column 2, lines 17-43. In particular, Healy only discloses removal of insulation to expose the interconnect pad 4. Also, as shown in Figure 1 of Healy, the bead 3 is centered on the pad 4 without covering the entire pad 4. Thus, the void shown in Figures 2 and 3 is that portion of the interconnect pad that is not covered by the solder bead. In view of Healy's disclosure, it is respectfully submitted that the area of Healy's interconnect pad that is available to receive solder is defined by the insulation removed over the pad. Accordingly, *prima facie* anticipation has not been established. Reversal of the rejection is requested.

III. Does Healy anticipate Claim 10?

Independent claim 10 calls for an element adapted to counteract an attractive force applied by a trace to solder placed on a bond pad. In sections I and II of this brief, it has been established that Healy fails to disclose a trace that applies an attractive force to solder placed on a bond pad. For similar reasons, Healy also fails to disclose an element adapted to counteract the attractive force.

Healy's disclosure with respect to Figures 1 and 2 reveals that insulation is removed to expose the interconnect pad 4. Column 2, lines 17-21. Thus, Healy does not disclose removing insulation to expose a stub trace. From this, it may be concluded that Healy's stub remains encased in the insulation. *Id.* A stub that is encased in insulation is not adapted to counteract an attractive force. As such, the bonding system of claim 10 is structurally different from Healy. Moreover, for the same reasons, Healy's insulation encased stub is not inherently adapted to counteract an attractive force. As such, *prima facie* anticipation has not been established with respect to claim 10. Reversal of the rejection is requested.

IV. Does Healy anticipate claim 14?

Dependent claim 14 calls for a solder mask defining a solder mask opening around a bond pad, an element extending from the bond pad and through the opening.

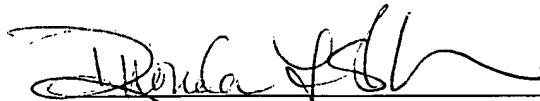
It has been established above in sections I, II, and III of this brief that Healy only exposes the interconnect pad 4. As such, the removed portion of Healy's insulation does not allow for the stub to extend through an opening. In other words, encasing insulation surrounds the stub. For at least this reason, *prima facie* anticipation has not been established with respect to claim 14. Reversal of the rejection is requested.

CONCLUSION:

In summary, it is respectfully submitted that a fair reading of Healy fails to disclose a structure that anticipates the claims on appeal. As such, reversal of the rejections is requested.

Respectfully submitted,

Date: March 18, 2005



Rhonda L. Sheldon
Registration No. 50,457
TROP, PRUNER & HU, P.C.
8554 Katy Freeway, Suite 100
Houston, Texas 77024
(713) 468-8880 [Phone]
(713) 468-8883 [Fax]